

Title (en)

ANTI-FOGGING INCREMENTAL SCALES FOR OPTICAL ENCODERS AND FABRICATION METHOD THEREOF

Title (de)

INKREMENTELLE ANTIBESCHLAGSKALEN FÜR OPTISCHE CODIERER UND HERSTELLUNGSVERFAHREN DAFÜR

Title (fr)

BALANCE INCRÉMENTALE ANTIBUÉE POUR CODEURS OPTIQUES ET SON PROCÉDÉ DE FABRICATION

Publication

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Application

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Priority

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Abstract (en)

The present invention discloses a manufacturing method for anti-fogging incremental optical scales for rotary and linear displacement encoders. The fogging problem is very relevant for optical encoders as if the scale surface becomes fogged, the encoder stops working. The invention provides the scale device with the anti-fogging feature, and its fabrication method, which employs surface texturing and high surface energy diamond-like-carbon (DLC) coatings. The surface texture maintaining the optical transmittance of floated glass and inducing superhydrophilicity can be made using a parallel plate or ICP reactive ion etching process in the CF₄/O₂ plasma. The non-fogging, transparent, hydrophilic, and wear-resistant DLC coating (5) can be grown by different deposition techniques, and the hydrophilicity of the coating (5) can be further increased by exposing the DLC coating surface to plasma, ion beam, or UV radiation. Such anti-fogging incremental scales enable the encoder to operate in a dew point environment.

IPC 8 full level

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